



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,883	07/16/2003	Michael A. Pickering	51163-2 DIV	9094
21874	7590	06/28/2004	EXAMINER	
EDWARDS & ANGELL, LLP			ABRAHAM, FETSUM	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			2826	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,883

Applicant(s)

PICKERING, MICHAEL

Examiner

Fetsum Abraham

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36-40 is/are allowed.
- 6) ☒ Claim(s) 20-31 is/are rejected.
- 7) ☒ Claim(s) 32-35 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claims rejection

The rejection sent on 4/15/04 has been modified based on the telephone interview conducted on 6/23/04 between the applicant's representative and the examiner. This action considers the preliminary amendment received on 7/16/03.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prochazka (4,004,934).

The patent discloses a method of forming a highly conductive or low resistivity SiC polycrystalline layer in a nitrogen atmosphere (see last paragraph of column 6 and first paragraph of column 7). Although the patent may not have mentioned a "substrate" in the claim language, it would have been obvious to one skilled in the art to safely conclude that polycrystalline SiC with very high conductivity can be made on a substrate of any material since mixing the atoms with other materials and exposing the resultant product in a nitrogen atmosphere at very high temperature is performed on a supporting substrate to avoid direct contact of the materials on furnaces.

As for the amount of nitrogen atmosphere in the process as in claims 21-24, the patent discusses in the same columns and paragraphs that the degree of conductivity of the SiC material is proportional to the amount of nitrogen environment, clearly asserting the variable nature of the process. Therefore, it would have been obvious to one skilled

in the art to utilize nitrogen environments in the making of low resistance Sic layers depending on the desired conductivity and resistivity of the same in specific applications.

As for claim 25, the claimed resistivity had been achieved by the method taught in the patent (see column7, first paragraph). In light of the fact that the patent clearly teaches SiC resistivity in relation to nitrogen ambiance, claim 26 also falls in the variable nature of the issue at hand vis-à-vis nitrogen ambiance. Therefore, it would have been obvious to one skilled in the art to make SiC of very low resistivity by increasing the nitrogen environment in its making, since the process increases the supply of n-type materials in the product.

The prior art product is made by CVD method as in claim 27.

As for claims 28,29, the pressure applied in making highly conductive SiC layer is also known to be variable in the art similar to processing time, temperature and content of nitrogen in the process.

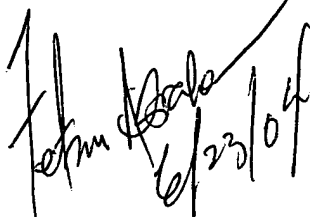
As for claims 30,31, nitrogen is taught to be supplied in the process in gas form.

Claims 32-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 36-40 have been allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.



Handwritten signature and date: 6/23/04